

questionnaires (main evaluation). Questionnaires were completed around menstruation and mid-cycle in the same individual. Outcome measures included demographic data, symptoms, previous treatments, current medications, absenteeism, presenteeism, HRQoL using SF-36 and EQ-5D. Women with irregular periods or bleeding were not invited to the main evaluation due to difficulty timing questionnaire completion. **RESULTS:** A total of 2699 women participated in the screening questionnaire. 61% of screened women were under 30 years, half had sought medical advice and 25% were currently self-medicating for their periods. Patients were severely affected as noted on the following measures. Symptoms: 84% report physical symptoms, 78% psychological symptoms and 41% bleeding issues. Absenteeism: 21% take > 1-2 days off per month due to their period. Presenteeism: 33% reduction in workplace performance versus referent populations. 331 women participated in the main evaluation. From this, there was a significant difference in HRQoL between the worst and best times of the menstrual cycle: EQ5D questionnaire 0.57 to 0.76 (difference 0.167,  $p < 0.001$ ); EQ5D VAS 64.3 to 77.7 (difference 11.0,  $p < 0.001$ ); SF6D 0.61 to 0.72 (difference 0.1,  $p < 0.001$ ). **CONCLUSIONS:** This evaluation shows that women suffering from problem periods have a significant impairment of their QoL and productivity in spite of treatment. A need exists for treatment that can alleviate these symptoms, enable more productive lives and improve the overall quality of life in these women.

### PIH33

#### UTILITY AND HUMAN CAPITAL LOSS IN ASTHMA, CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND RHEUMATOID ARTHRITIS – THE IMPACT OF PREVALENCE, DISEASE SPECIFIC MORTALITY AND UTILITY DECREMENT ON OVERALL HEALTH BURDEN

Meszaros A<sup>1</sup>, Agh T<sup>1</sup>, Inotai A<sup>2</sup>

<sup>1</sup>Semmelweis University, Budapest, Hungary, <sup>2</sup>Syreon Research Institute, Budapest, Hungary

**OBJECTIVES:** Asthma, chronic obstructive pulmonary disease (COPD), rheumatoid arthritis (RA) are chronic conditions with different prevalence, mortality, effect on patient's quality of life (QoL). The aim of this study was to compare the human capital loss and utility of patients in these conditions with the general Hungarian population; and to estimate the impact of utility decrement and disease specific mortality on the overall health burden in these diseases. **METHODS:** QoL was assessed with the EuroQoL EQ-5D in cross sectional non-interventional studies. Overall annual health loss due decreased QoL was estimated by multiplying number of patients with the utility decrement. Overall annual years of life loss due premature mortality was calculated by multiplying crude age/disease/gender specific mortality with age/gender specific life expectancy, age/disease/gender specific utility and the number of inhabitants in the age cohort. The aggregation of these expressed the total annual health loss in quality adjusted life years (QALYs). **RESULTS:** A total of 869 consecutive patients were recruited (402 with asthma, 214 with COPD and 253 with RA). Utility values among patients were significantly lower compared to the general population in all age cohorts ( $p < 0.001$ ). RA was associated with significantly lower utilities compared to asthma between the ages of 45 to 64, and compared to COPD between the ages of 45 to 74 ( $p < 0.05$ ). There was, however, no significant difference between QoL of the two respiratory disorders. Based on conservative estimates (e.g. considering age between 45-84), asthma, COPD and RA contribute to a total annual health loss of 20905, 66911 and 10660 QALYs in Hungary, respectively. **CONCLUSIONS:** The three conditions result in considerable QALY loss to the Hungarian society. Our results outline the importance of the overall health burden calculations, since utility decrement has a significant impact on Human capital loss and provides important data for decision makers.

### PIH34

#### IDENTIFYING INDIVIDUALS WITH DIFFERENT TIME PREFERENCES IN TIME TRADE-OFF VALUATIONS OF HYPOTHETICAL HEALTH STATES: A LATENT CLASS ANALYSIS OF THE US EQ-5D-3L VALUATION DATA

Luo N

National University of Singapore, Singapore, Singapore

**OBJECTIVES:** In theory, time preference, or discounting, affects health-state valuation using the time trade-off (TTO) method. This study aimed to determine individuals with different time preferences in the general US population using the latent class analysis (LCA). **METHODS:** LCA was performed with valuation data from the US Valuation of EQ-5D Health States Study. In that study, 42 EQ-5D-3L health states and 'unconsciousness' were categorized into 5 blocks for each respondent to value one randomly selected block of health states ( $n=13$ ). Separate LCA was conducted for respondents valuing the same block of health states. **RESULTS:** Modeling outputs were consistent across the 5 subgroups. The 3-class model was adopted to reflect the hypothesized effects of time preferences on valuations. The first class (size: 53.1% of the general US population) was recognized as the average individuals. The mean health-state preference scores derived from this class ranged from -0.185 to 0.920. The second class (size: 34.4%) was a group of individuals with a low time preference. The mean health-state preference scores ranged from 0.056 to 0.963. Compared with those in class one, individuals in class two were more likely to be Hispanic or black, married or never married, and comment that the TTO valuation tasks was very easy to do. The third class (size: 12.5%) comprised individuals with a high time preference. The mean health-state preference scores derived from this class ranged from -0.605 to 0.655. Individuals in this class were older and more likely to be female, Hispanic, poorly educated, with lower income, and divorced or widowed. **CONCLUSIONS:** This study provides evidence for the existence of individuals with high and low time preferences in the general US population. Future valuation studies using the TTO method should explicitly measure respondents' time preferences and investigate the effects of time preferences on health-state valuations.

### PIH35

#### DISABILITY-ADJUSTED-LIFE-YEARS (DALYS) LOSS IN POSTMENOPAUSAL WOMEN WITH OSTEOPOROSIS

Darba J<sup>1</sup>, Kaskens L<sup>2</sup>, Perez-alvarez N<sup>2</sup>, Palacios S<sup>3</sup>, Neyro JL<sup>4</sup>, Rejas J<sup>5</sup>

<sup>1</sup>Universitat de Barcelona, Barcelona, Spain, <sup>2</sup>BCN Health, Barcelona, Spain, <sup>3</sup>Instituto Palacios de Salud y Medicina de la Mujer, Madrid, Spain, <sup>4</sup>Hospital Universitario Cruces, Baracaldo (Vizcaya), Spain, <sup>5</sup>Pfizer España, Alcobendas/Madrid, Spain

**OBJECTIVES:** To estimate the disability-adjusted life years (DALYs) lost in a nationwide representative sample of postmenopausal women with osteoporosis. Effect of previous bone fracture and type of drug-based therapy of osteoporosis were also explored. **METHODS:** DALYs were estimated based on patients' clinical characteristics and Health-Related Quality-of-Life (HRQoL) data from a cross-sectional, epidemiological one-visit study (the GINERISK study). The study enrolled postmenopausal women (at least 12-month after last menstrual period) with osteoporosis, above 18-years old, who were attending outpatient clinics of Gynecology in Spain. Socio-demographics, bone densitometry (BD) and HRQoL were recorded. HRQoL was assessed using the generic SF-12v2 questionnaire, which was used to derive disability values. Mortality rates were extracted from the Spanish national statistics database. DALY's were calculated according to Fox-Rushby and Hanson (2001) and ANCOVA models, adjusted for age, BD, previous osteoporotic bone fractures (BF), treatment with calcium or calcium+vitamin D, exercise and number of risk factors for osteoporosis, were used for comparative purposes. **RESULTS:** DALYs could be computed in 2,782 (67%) out of 4,157 postmenopausal women, with a mean (95% CI) age of 61.0 (60.7-61.2) years. Mean overall undiscounted DALY's lost per women were 6.1 (5.9-6.2), with a significantly higher loss in women with previous BF; 7.8 (7.2-8.4) in comparison with women without BF [5.8 (5.6-6.0)] or osteoporotics with a BD > -2.5 T-score after receiving a drug-based therapy [6.2 (5.8-6.5)];  $F=27.0$  ( $P < 0.01$ ). A model explaining the variation in the levels of health was found which included the use of a SERM-based therapy, age, previous osteoporotic BF and the number of risk factors for osteoporosis as significant predictors ( $P < 0.05$ ). **CONCLUSIONS:** DALY's loss was considerable amongst postmenopausal women with osteoporosis. The use of a SERM, not having previous osteoporotic bone fracture, having less osteoporotics risk factors and being older showed to be linked to less DALY's lost.

### PIH36

#### QUALITY OF LIFE OF MEDICAL UNIVERSITY OF WARSAW FACULTY OF PHARMACY STUDENTS IN 2010-2012

Zawodnik S<sup>1</sup>, Krancberg AN<sup>1</sup>, Hermanowski TR<sup>1</sup>, QOLSWG Quality of Life Students Working Group<sup>2</sup>

<sup>1</sup>Medical University of Warsaw, Warsaw, Poland, <sup>2</sup>Department of Pharmacoeconomics, Medical University of Warsaw, Warsaw, Poland

**OBJECTIVES:** To measure Health Related Quality of Life among Pharmacy students at the Medical University of Warsaw and compare results for years 2010-2012. **METHODS:** In the same period of years 2010-2012, students from the Faculty of Pharmacy, Medical University of Warsaw were surveyed with a set of HRQoL questionnaires. The survey was conducted in the middle of the semester, when students have no exams, nor tests and was a part of long-term Pharmacoeconomic Student Chapter's project. Students self-completed pen and pencil versions of questionnaires and didn't receive any compensation. They were asked to give information regarding sex, age, year of study, average grade during the previous year of study and to complete final official Polish version of EQ-5D-5L, followed by EQ-VAS, SF-36v.1 and EQ-5D-3L. **RESULTS:** In the study period, 444, 369 and 364 students responded from each year respectively and the results were included in the final analysis. Concerning SF-36 dimensions, students reported major problems in vitality;  $52.54 \pm 15.19$ ;  $53.32 \pm 18.17$ ;  $46.67 \pm 18.23$  as opposed to physical functioning  $96.57 \pm 3.75$ ;  $95.64 \pm 8.28$ ;  $94.15 \pm 9.39$ . Mean rate of own health on EQ-VAS was  $79.23 \pm 10.61$ ;  $80.13 \pm 15.00$ ;  $76.05 \pm 17.30$  and mean EQ-5D index, based on Polish TTO value set, was  $0.94 \pm 0.07$ ;  $0.94 \pm 0.07$ ;  $0.91 \pm 0.11$  (in the range from -0.523 to 1). In 2010 and 2011 students of 3<sup>rd</sup> year and 1<sup>st</sup> year reported lowest QoL independently of the measure used: EQ-VAS and EQ-index, respectively. In 2012 students of 2<sup>nd</sup> year reported lowest QoL measured by EQ-VAS  $70.33 \pm 20.63$  and 3<sup>rd</sup> year measured by EQ-index  $0.89 \pm 0.13$ . **CONCLUSIONS:** Generic questionnaires used in the survey are sensitive enough for measuring quality of life in young and relatively healthy population. Assessment of HRQoL was similar in years 2010 and 2012. The survey needs to be continued next year.

### PIH37

#### TRENDS OF QUALITY OF LIFE IN SOUTH KOREAN ADULTS DURING 2007-2010

Chang CW<sup>1</sup>, Choi IS<sup>1</sup>, Lee SM<sup>2</sup>, Suh DC<sup>3</sup>

<sup>1</sup>Rutgers University, Piscataway, NJ, USA, <sup>2</sup>Chung-Ang University, Seoul, South Korea, <sup>3</sup>College of Pharmacy, Chung-Ang University, Seoul, NJ, South Korea

**OBJECTIVES:** To investigate trends of the quality of life in South Korean adults aged 19 and older using Korean National Health and Nutrition Examination Survey (KNHANES). **METHODS:** This study used the 2007-2010 Korean National Health and Nutrition Examination Survey (KNHANES), a nation-wide survey on various health-related questions for a nationally representative sample of the non-institutionalized population of South Korea. Quality of life (QOL) was measured using the EQ-5D instrument and the QOL index scores were calculated based on Korean version of the score calculation algorithm. Trends of QOL index and factors influencing QOL index scores were analyzed using analysis of variance and ordinal least square regression after adjusting for the study variables. **RESULTS:** A total of 23,777 adults were identified during 2007 to 2010. Mean age was 44.7 years and 50.5% were female and 68% were graduated from high schools or colleges and 31% had the body mass index  $\geq 25$ . Hypertension was most prevalent chronic disease (16.5%), followed by arthritis (13.3%), hyperlipidemia (7.0%), and diabetes (6.3%). The overall EQ-5D in-

dex scores have been slightly increased from 0.94 to 0.96 during 2007-2010. Male adults had higher EQ-5D index scores than female (0.96 vs. 0.92). Elderly (age $\geq$ 60) had significantly lower EQ-5D index scores (score ranges: 0.02 to 0.11) than young adult (age=19-29) after adjusting for other variables. EQ-5D index scores were significantly reduced by stroke (reduced by -0.10), arthritis (reduced by -0.05), cardiovascular disease (reduced by -0.04), and diabetes (reduced by -0.02). **CONCLUSIONS:** QOL in South Korean adults was significantly reduced by chronic diseases and age. Despite national efforts to detect and treat chronic diseases at early stage of disease, significant reduction in QOL due to chronic diseases still exist. It is emphasized the need for implementation of effective public health programs for decreased prevalence of chronic diseases.

#### PIH38

##### CAPTURING QUALITY OF LIFE IN CONDITIONS WITH FLUCTUATING SYMPTOMS

Pumford N, Crawford G, Wade A  
Patients Direct, Glasgow, UK

**OBJECTIVES:** In a real world setting, to design a system to measure the effect of fluctuating symptoms (problem periods) by capturing information on days of the largest and smallest impact. **METHODS:** The evaluation was conducted throughout the UK using a web-based system – PROBE (patient reported outcome based evaluation). We investigated women reporting problems with their periods. The issues in setting out and programming the study design were a) determining the day on which they would suffer the greatest impact, b) duration of impact c) predicting when the normal data could be collected. Variability exists between woman to woman and between cycles for each woman. The problems were addressed by an initial screening questionnaire, which determined time between menses, length of menses, regularity of menstrual cycle and date of next menses so that questionnaires could be sent out on the appropriate days. 5 consecutive days of questionnaires were completed during menses and 3 consecutive days between menses. Measures included demographic data, symptoms, previous treatments, current medications, absenteeism, presenteeism, HRQoL using SF 36 and EQ 5D. **RESULTS:** Target numbers were 2000 for the screening questionnaire and 200 for the main survey, in reality 2699 women participated in the screening questionnaire with 331 in the main survey. 165 women completed the survey at both the time of menses and between menses allowing a direct comparison of their reported outcomes. On the validated questionnaires the data quality was high as reported by the Copyright holders. Significant findings were obtained on the primary and secondary measures. **CONCLUSIONS:** This evaluation shows that a web based survey system (PROBE methodology) is flexible, interactive and reliable in obtaining patient reported outcomes in a condition with fluctuating symptoms.

#### PIH39

##### OCCUPATIONAL STRESS AND BURNOUT: IMPACT ON THE ATTITUDES OF PHARMACISTS IN PROVIDING PHARMACEUTICAL SERVICES

Jocic D, Krajnovic D, Lakić D, Tasic L  
University of Belgrade – Faculty of Pharmacy, Belgrade, Serbia and Montenegro

**OBJECTIVES:** To determine the relationship between occupational stress and burnout of pharmacists in community pharmacies as well as the influence on the pharmacists' attitudes about their own work with patients. **METHODS:** The sample included 278 pharmacists employed in community pharmacies, 172 of whom were from state and 106 from private pharmacies. Instruments used: self-assessment tests for levels of stress and burnout, and Pharmacists' Attitudes and Beliefs Scale (PABS) created for research purposes. **RESULTS:** More than half of the pharmacists are under stress (56.1%), and 34.1% of pharmacists have symptoms of burnout. There is a correlation between scores on the test for self-assessment of stress levels and the following variables of PABS scale: the degree of burnout ( $r = 0.767$ ,  $p < 0.01$ ), pharmacists' opinion that patients take their precious time ( $r = 0.656$ ,  $p < 0.01$ ) and conflicts ( $r = 0.516$ ,  $p < 0.01$ ). The degree of burnout is correlated with the pharmacists' perception that patients do not understand the instructions about the therapy they receive from the pharmacists ( $r = 0.701$ ,  $p < 0.01$ ). Depending on the working environment (pharmacists working alone in shifts, with other colleague/s or with technicians) pharmacists differ significantly in the level of stress ( $F(3,274) = 5.6$ ,  $p = 0.01$ ), as shown by the correlation between these variables ( $r = -0.517$ ,  $p < 0.01$ ). There is a correlation between stress levels and the degree of burnout. Pharmacists who are stressed have a feeling that their patients are consuming valuable time and often came into conflict with patients. The degree of burnout is correlated with the pharmacists' perception that patients do not understand the instructions about the therapy they receive from the pharmacists. **CONCLUSIONS:** The results show that the stress of pharmacists causes burnout, leading to changes in the pharmacists' attitudes about their own work with patients.

#### PIH40

##### WHAT DO HEALTH ECONOMISTS EXPECT FROM THEIR EMPLOYER- RESULTS FROM AN ON-LINE SURVEY IN GERMANY

Mahlich JC<sup>1</sup>, Morfeld JC<sup>2</sup>

<sup>1</sup>Janssen-Cilag GmbH, Neuss, Nordrhein-Westfa, Germany, <sup>2</sup>Universität zu Köln, Cologne, Germany

**OBJECTIVES:** The business model of the pharmaceutical industry is changing and a higher emphasize is placed on health economic expertise in order to demonstrate not only clinical but also economic value of new products. While many studies evaluate work preferences of physicians, we have not come across a study on health economists, although their importance is increasing. To fill this gap, we surveyed health economics students and experienced health economists about their job expectations and job preferences. **METHODS:** From the management literature we have identified four relevant factors that affect job satisfaction: Corpo-

rate culture, employer's reputation, financial remuneration, and scientific way of working. By means of an online survey we have asked 54 health economics students and experienced health economists about the importance of those factors. The respondents also had to assess the expression of the factors within industry, academia, insurances, hospitals, and associations. **RESULTS:** Experienced health economists differ in their work preferences from health economic students. For students, the financial aspect of the job plays a bigger role compared to the experienced health economists. For both groups, corporate culture is the most important determinant of job satisfaction. The academic sector enjoyed the highest reputation, while the perception of the remuneration in this sector was low. An opposite pattern was observed for the pharmaceutical industry. Only 6% of the health economist students are interested in an industry career, the majority wants to work in hospitals and health insurance companies. **CONCLUSIONS:** From an industry perspective, it is recommended to raise awareness for career opportunities in the pharmaceutical industry. This particularly applies against the background of demographic change and increasing demand for health economists.

#### INDIVIDUAL'S HEALTH - Health Care Use & Policy Studies

#### PIH41

##### LONG-TERM FISCAL IMPLICATIONS OF FUNDING ASSISTED REPRODUCTIVE THERAPIES: REVIEW OF THE LITERATURE

Pérez-Camarero S<sup>1</sup>, Ivanova A<sup>1</sup>, García-Jurado L<sup>2</sup>, Polanco C<sup>2</sup>, Hidalgo A<sup>3</sup>

<sup>1</sup>Instituto Max Weber, Majadahonda, Madrid, Spain, <sup>2</sup>Merck SL, Madrid, Spain, <sup>3</sup>Castilla-La Mancha University, Toledo, Spain

**OBJECTIVES:** Progressive population ageing in developed countries leads the assessment of policies that favor birthrates. Thus, the purpose of this study was to assess the evidence available about long run net fiscal implications of State-subsidize assisted reproductive therapies (ART). **METHODS:** Systematic review of articles published both in English or Spanish during the last decade combining the search terms: "infertility", "assisted reproductive technology", "economics/cost and cost analysis" was conducted on Medline, Embase and Cochrane Library databases. Reference lists of included studies were also searched to identify other relevant studies. **RESULTS:** A total of 86 articles were identified, of which 13 (15%) were included in this review. Of these, 5 (38%) economically quantified lifetime future net tax revenues from an ART-conceived child in different countries (Brazil, Denmark, Sweden, UK and United States) applying a generational accounting model. Results from these studies concluded that each monetary unit invested in funding ART would revert in tax benefits for the States estimated between 1.24 and 13.91 monetary units. The age at which at which the financial position between the individual and the State begins to be favourable to the States was established between 38 and 41 years. **CONCLUSIONS:** Generational accounting models allow estimating long-term fiscal implications of public funding of ART. It would be recommendable to have a similar analysis for Spain in order to inform decision makers about policies which encourage birthrates.

#### PIH42

##### EFFECTIVENESS OF A PROTOCOL FOR RESPIRATORY SYNCYTIAL VIRUS (RSV) IMMUNOPROPHYLAXIS IN PRE-TERM INFANTS BORN AT <34 WEEKS GESTATION AGE

Flores S<sup>1</sup>, Fernandez Perez A<sup>2</sup>, Lozada A<sup>3</sup>, Bautista J<sup>4</sup>

<sup>1</sup>Hospital Universitario Virgen del Rocío, Sevilla, Spain, <sup>2</sup>Virgen Del Rocío University Hospital, Sevilla, Spain, <sup>3</sup>Virgen del Rocío University Hospital, Sevilla, Spain, <sup>4</sup>Virgen del Rocío University Hospital, Sevilla, Spain

**OBJECTIVES:** 1) To evaluate the effectiveness of a Protocol for respiratory syncytial virus (RSV) immunoprophylaxis in pre-term infants born at <34 weeks gestation age (GA), and 2) To calculate economic burden in accordance with the Protocol versus labeled indication for palivizumab. **METHODS:** Setting: Spain/1500-bed Hospital. RSV season: October 2011 through March 2012. An evidence based protocol on SRV prophylaxis was developed by the Neonatal Intensive Care Unit (NICU) and Pharmacy Department. The protocol recommended prophylaxis for infants: 1) Born at 32-34 weeks of GA who were born later 1st August and having school-aged brothers or sisters. 2) Born at 29-32 weeks of GA if younger than 6 months of age. 3) Born at <28 weeks of GA-if younger than 12 months of age. These criteria were more restrictive than palivizumab label. All patients received palivizumab 15 mg/kg and a maximum of 5 doses was administered. All data were gathered from electronic medical record. The patients were followed until May 1, 2012. The cost of 100 mg vials of Palivizumab were 814, 36. **RESULTS:** A total of 168 children <35 weeks of GA were born from January 2011-March 2012. Ninety-six patients were treated with palivizumab. 9 of them needed hospitalisation because RSV: 72 children <35 weeks of GA, who did not perform our criteria for palivizumab administration. None of them were hospitalised because RSV. The economic burden of palivizumab treatment was 353.000 €. Using this protocol we have been able to obtain a saving of the 68.2% compared to the label recommendations. **CONCLUSIONS:** The protocol appears to cover all subgroups of patients at risk of RSV infection. Patient selection based on the best evidence hasn't had a negative impact on clinical outcomes. The palivizumab use can be optimized if highest risk of RSV infection infants are correctly identified.

#### PIH43

##### COMPARISON OF UNINTENDED PREGNANCY RATES AMONG WOMEN WHO INITIATED ORAL CONTRACEPTIVE THERAPY WITH A 84/7 ESTRADIOL OR A 84/7 PLACEBO

Brewster C<sup>1</sup>, Lage MJ<sup>2</sup>, Grubb E<sup>1</sup>

<sup>1</sup>Teva Pharmaceuticals, Kansas City, MO, USA, <sup>2</sup>HealthMetrics Outcomes Research, Delray Beach, FL, USA